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straights perpendicular to a third are parallel; that is "being produced ever so far both ways *do not meet*".

II. Euclid never admits any hypothetical construction beyond his actual postulates, so that Eu. I. 27 is in harmony both with von Staudt's extension of Euclidean space, in accordance with which two coplanar straights perpendicular to a third have at infinity a common point; and also in harmony with Lobatschewsky's non-Euclidean space, in which two coplanar straights perpendicular to a third have no point in common, not even at infinity.

III. The assumption, for spherics and single elliptic geometry, that two straights perpendicular to a third do intersect without going to infinity, is deliberately taken as the contradictory of Labatschewsky's theorem 4.

GEORGE BRUCE HALSTED,

TRANSLATOR OF LOBATSCHEWSKY.

L. B. Hayward's solution of Ex. 3, p. 19, Jan. No., is not correct. Mr. Hayward says the loss is $3\% + 2\frac{91}{100}\%$ or $5\frac{91}{100}\%$ while it is only $2\frac{91}{100}\%$. If, in the problem, he had bought it back for 97% of what he paid for it originally, that is, for exactly what he sold it for, he would have paid back exactly what he received for it and of course would have lost nothing. He loses then only the amount he pays over what he sold it for that is $2\frac{91}{100}\%$.

Or look at it another way. It is assumed that the stock is worth par. Then if he sells for 97% he loses 3%. Then if he buys back at $99\frac{91}{100}\%$ he is a gainer by $\frac{9}{100}\%$ as it is worth par. That is, again he loses $(3\% - \frac{9}{100}\%) = 2\frac{91}{100}\%$.

The cost, therefore, is $\$12 \div 0.02\frac{91}{100}$; or $\$412.37 +$

W. F. BRADBURY.

The criticisms made by Prof. Black (No. 3, p. 67) is now inapplicable as the demonstration given in Wentworth's *Plane & Solid Geometry*, Revised Edition 1891, is made valid by the first sentence in the proof: "If the two pyramids are not equivalent, suppose $S-ABC$ to be the greater." We neglected to refer to Wentworth's demonstration until after the criticism referred to had been published.

We find, after examination, a number of recently revised geometries containing fallacious demonstrations to the proposition in question.

Prof. Whitaker referring to the above criticism says, "I would state that the proof of Proposition XXIV, Bk. V., in Wentworth's is also incorrect." If the proposition referred to by Prof. Whitaker, is Prop. XX., Bk. V., Wentworth's Revised Edition, 1891, we would say that the fallacy has been corrected.

B. F. FINKEL.

EDITORIALS.

The subscription list to the MONTHLY is growing nicely but it is yet many hundreds short of what it should be.

Occasionally we have sample copies returned to us, with the remark, "It is too fine for my blood." Now it occurs to the editors that something of the nature of the MONTHLY is needed to give a better tone to the "blood." Try the MONTHLY a year and see if the tone and vigor of the mind does not improve because of the increased activity of the "blood."

Every lover of Mathematics and every teacher of Mathematics in the United States should take the MONTHLY. Articles are now being published that will after while be reprinted and bound in book form and which alone will then cost the price of the Journal.

Because of the lengthy Biographical sketch published in this number, we have been compelled to defer many interesting communications. It is not the purpose of the MONTHLY to publish such extended biographies, except when, as it is in this case, the life of the man treated justifies it.

We have a number of criticisms and replies to certain problems and articles which will appear as we find room. We hope that our contributors will take these criticisms in a spirit of kindness. It is not the purpose of the MONTHLY to publish lampoons, or sarcastic criticisms. Its object is to promote the science of Mathematics and Mathematical teaching.

It is objected that some of the problems published are not worthy of a place in the MONTHLY, being too easy. On the other hand we are admonished not to soar entirely in the higher regions of Mathematical thought but publish problems for the use of classes in the various branches of Mathematics. Now as we are publishing an unusually large Magazine, at an unusually low price, we will try to harmonize these jarring interests by giving space alike to elementary and higher Mathematics.

Dr. Paul Staekel of the University of Halle and Professor Friedrich Engel of the University of Leipzig will publish through Teubner in Leipzig within a year, under the title "Theorie der Parallellinien," the First Book of Saccheri's marvelous treatise now appearing in English in the AMERICAN MATHEMATICAL MONTHLY. (See Dr. Halsted's Non-Euclidean Geometry, Historical and Expository).

It is a noteworthy honor to America and to the American Mathematical Monthly, thus to have unconsciously anticipated and forestalled the great German scientists.

BOOKS AND PERIODICALS.

A Treatise on Plane and Spherical Trigonometry and Its Application to Astronomy and Geodesy with Numerous Examples. By Edward A. Bowser, LL. D., Professor of Mathematics and Engineering in Rutgers College. 8 vo., cloth and leather back, 368 pp. Price \$1.60. Boston: D. C. Heath & Co.

Excepting Chauvenet's, this is the most complete Treatise on Trigonometry